



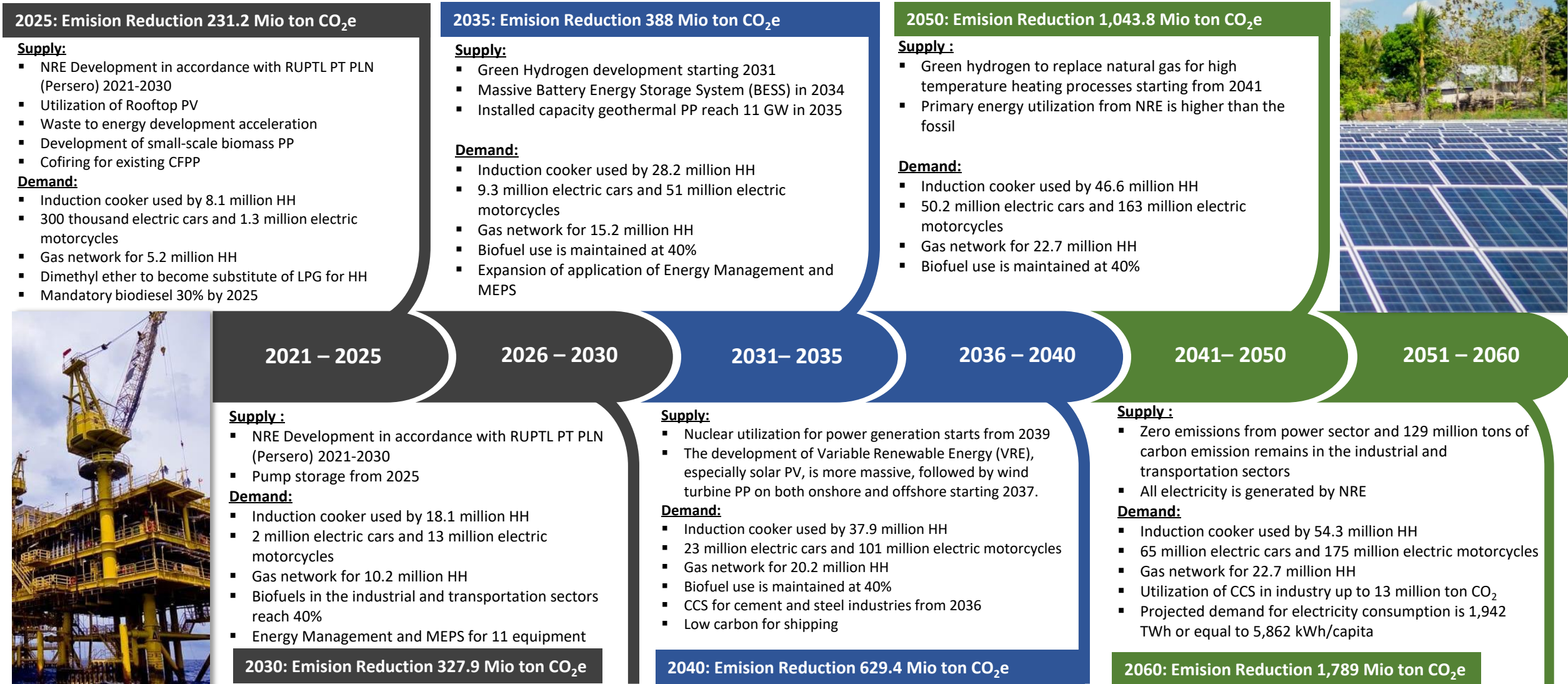
DIALOGUE ON IPP JUST ENERGY TRANSITION INITIATIVES: UPDATE ON INDONESIA'S COAL RETIREMENT ROADMAP

Bali, November 15th 2022



ENERGY TRANSITION ROADMAP TOWARDS CARBON NEUTRAL

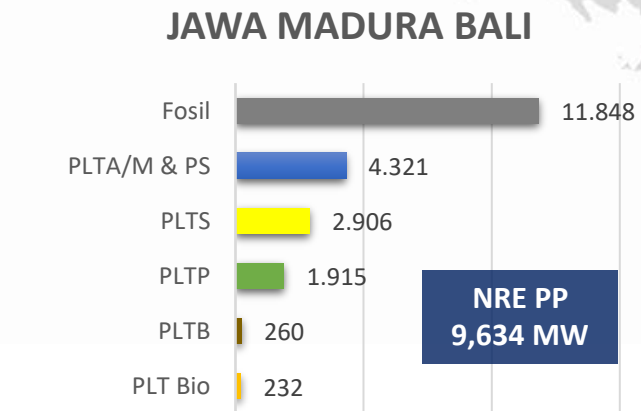
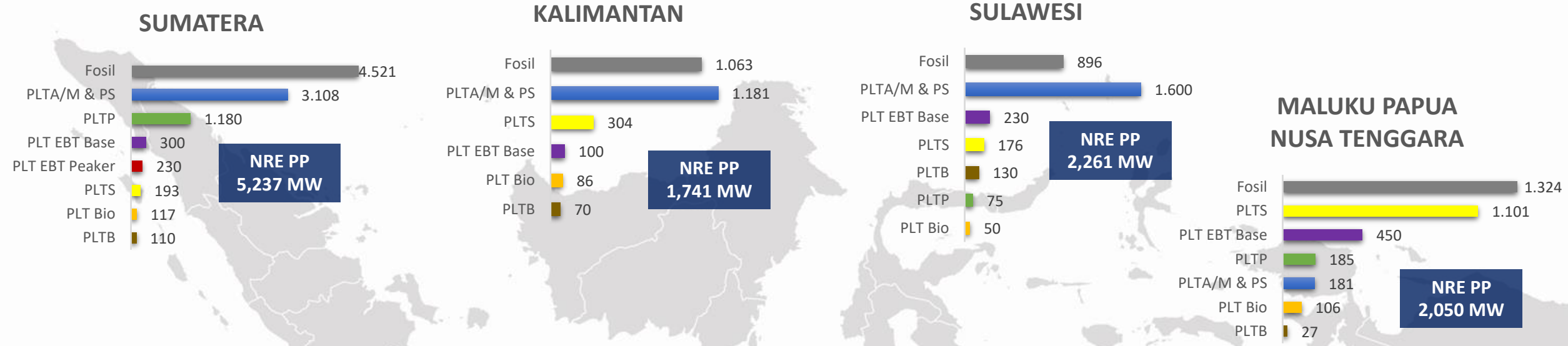
- 1) Timeline of strategic actions to achieve net zero emission in the energy sector.
- 2) This Roadmap will be a form of joint commitment between the government and stakeholders to realize NZE in 2060 or sooner.



Innovative low emission technologies such as CCS/CCUS can be applied under certain conditions to existing fossil power plants to accelerate emission reductions in the transition towards cleaner and greener energy

NRE PP DEVELOPMENT PLAN YEAR 2021-2030 - GREEN RUPTL

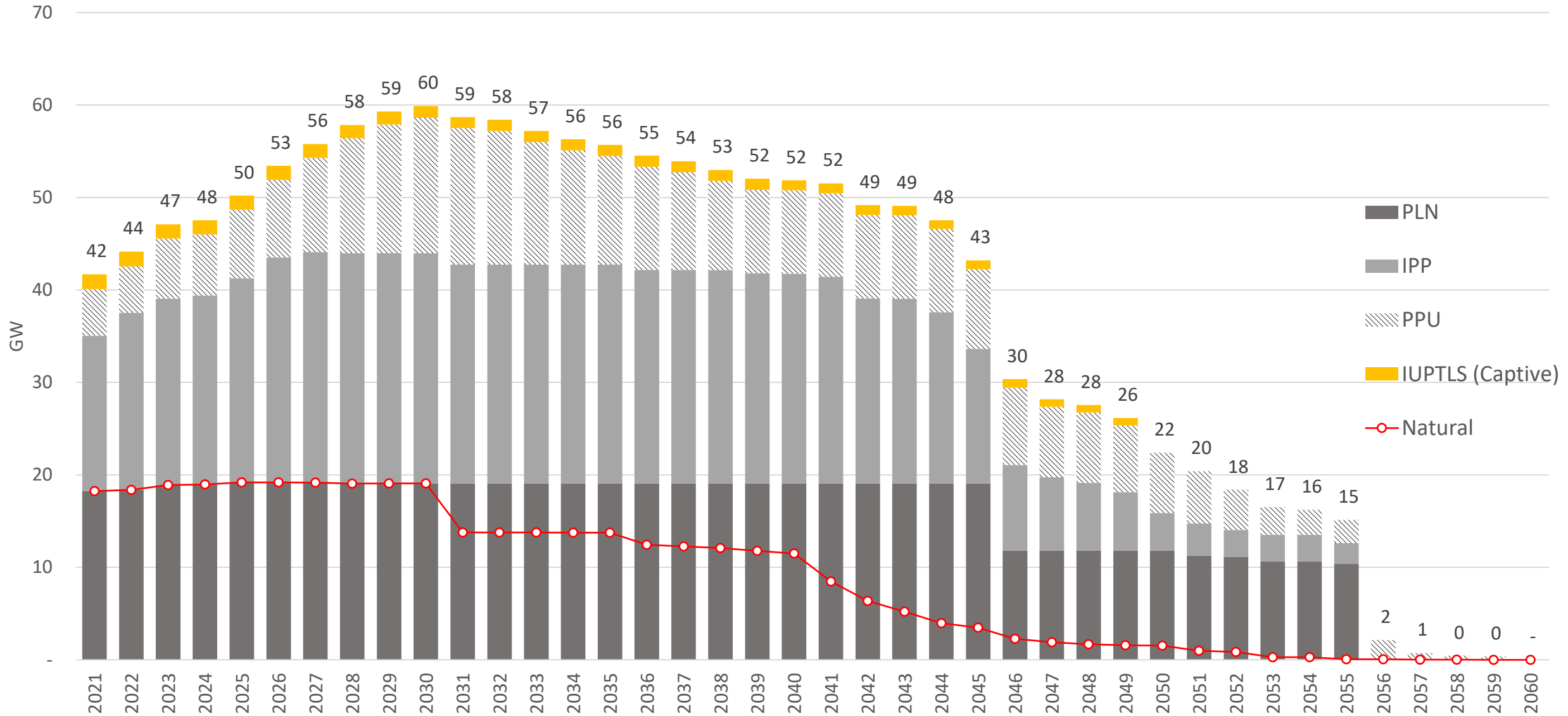
- NRE additional capacity is targeted to reach 20,9 GW (51,6% of the power plant in RUPTL 2021-2030).
- NRE development has been carried out in accordance with the systems' electricity balance.



No	PP	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
1	Geothermal (PLTP)	136	108	190	141	870	290	123	450	240	808	3,355
2	Large Hydro (PLTA)	400	53	132	87	2,478	327	456	1,611	1,778	1,950	9,272
3	Mini Hydro (PLTM)	144	154	277	289	189	43	-	2	13	6	1,118
4	Solar PV (PLTS)	60	287	1,308	624	1,631	127	148	165	172	157	4,680
5	Wind Turbine (PLTB)	-	2	33	337	155	70	-	-	-	-	597
6	Bioenergy (PLT Bio)	12	43	88	191	221	20	-	15	-	-	590
7	NRE PP - Base	-	-	-	-	-	100	265	215	280	150	1,010
8	NRE PP - Peaker	-	-	-	-	-	-	-	-	-	300	300
Total		752	648	2,028	1,670	5,544	978	991	2,458	2,484	3,370	20,923

COAL FIRED POWER PLANT RETIREMENT SCENARIO

Retirement of PLN's takes into account asset revaluation with an extension of the lifetime of the generator by 30-40 years since 2016



CFPP EARLY RETIREMENT MEMR SCENARIO

- The CFPP early retirement exercise method uses the **life cycle method costing based on cash flow analysis** to calculate the cost of CFPP early retirement.
- The amount of cost replacing early retired power plants depends on several parameters, including: **Capacity, initial investment cost depends on power plant capacity, operational life time (technical lifetime or based on PPA), and the type of financing (loan, interest, repayment period, and debt-to-equity ratio).**
- So far, **33 CFPP** have been successfully exercised to be early retired with total capacity of **16,810 MW**; where **28 CFPP** are operated by PLN Group (**13,531 MW, 80%**), and 5 CFPP IPP (**3,279 MW, 20%**).

Distribution of CFPP location exercise early retirement



5 CFPP Priorities to be early retired:

Based on **funding needs and generating capacity** in Jamali 500 kV system:

1. Paiton Unit 9
2. Suralaya Unit 5-7
3. Paiton Unit 1-2
4. Suralaya Unit 1-4
5. Suralaya Unit 8

Based on **funding needs and CO₂ emission** in Jamali 500 kV system:

1. Paiton Unit 9
2. Suralaya Unit 5-7
3. Paiton Unit 1-2
4. Suralaya Unit 1-4
5. Adipala Unit 1

REGULATIONS TO PHASE DOWN CFPP

- **The Presidential Regulation on Carbon Economic Value** that has been enacted to regulate the mechanism for carbon trading system, economic incentives and carbon levies.
- **The Presidential Regulation on the Acceleration of Renewable Energy Development for Electricity Supply** that has been stipulated to provide a better and conducive renewable energy investment, and to phase down coal.
- **The Ministerial of Energy and Mineral Resources Regulation on Carbon Tax and Trading in Power Generation** that currently is being finalized which requires coal plants to reduce their emissions through cap and tax mechanism.



Thank You

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